

What is Claimed is:

1. A method for polymerizing olefins in successive, multiple stages by use of a plurality of polymerization reactors disposed in series comprising at least one gas-phase polymerization reactor after a first reactor, which method comprises removing a multi-component gas from a gas-phase reactor and pressurizing and/or cooling the gas to thereby liquefy a portion of the gas; discharging at least a portion of the removed gas; and returning the remaining gas and the liquid to the gas-phase reactor.

2. A method for polymerizing olefins in successive multi-stages by use of a plurality of polymerization reactors disposed in series comprising at least one gas-phase polymerization reactor after a first reactor, which method comprises removing a multi-component gas from a gas-phase reactor and pressurizing and/or cooling the gas to thereby liquefy a portion of the gas; returning the liquid to the gas-phase reactor; further pressurizing and/or cooling the remaining gas to thereby liquefy a portion of the gas; discharging at least a portion of the gas; and returning the remaining gas and the liquid to the gas-phase reactor.